BB2400 Bionanotechnology 7.5 credits

Bionanoteknologi

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for BB2400 valid from Spring 2025

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Biotechnology

Specific prerequisites

Completed bachelor thesis 15 hp and 50 hp some of the subjects chemistry/chemical engineering, physics, nanomaterials, electronics, or computer science. English 6/B.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After successful completion of the course, the students should be able to:

- Define the basic elements of the interface between biology and nanotechnology
- know and define biological macromolecules
- Assesss function and potential application of protein and DNA based nanostructures
- Know and reflect on the basic concept in molecular recongnition

Course contents

The molecular machinary of the cell, as well as the physico-chemical interactions between the cells and characterizes the living systems. Uniderstanding the assembly of the cells opens some exciting possibilities to construct artificial structures in applied nanotechnology, which will mimic the functions of the biological systems. A major challenge is to exploit the structures and processes of biomolecules at the cellular and organ specific levels in order to design novel functional materials, biosensors and bioelectronic components. This includes four modules:

1. Basic cell biology and cell organells
2. Biological macromolecules and mocelular recognition
3. Protein based nanostructures
4. DNA based nanostructures

Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- SEM1 - Seminars, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

The examiner, in consultation with the KTH Disability Coordinator (Funka), decides on any adapted examination for students with documented permanent impairment.

Other requirements for final grade

In order to pass the exam you need to fulfill the lab course, project and presentation.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.